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PRELIMINARY OBSERVATIONS ON CIA's EFFORTS IN DEVELOPING ANALYTICAL METHODOLOGIES

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1.0 Background

at the time DD/NFAC, requested that STAP examine CIA's work on analytical methodologies. In response to this request the authors met with representatives of ORD, OWI, OSR, OPA and OER. As a result of these discussions, and a preliminary analysis of past and current CIA efforts in this field, we make a number of general observations. In addition, we identified four topics that we discuss in greater detail:

- o Evaluation of Analytical Efforts

- o Analyst-User Interaction: Feedback

- o Role of Automation

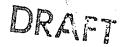- o Interdisciplinary Analysis

2.0 General Observations

Analysts are individuals and each carries out his work in his own way. The development of analytical methodologies requires some understanding of the common features of how analysts work. However, at present there is no common language/framework for describing analysis. Further, there are no commonly accepted measures or approaches to characterize analytical efforts (See Section 3.0). What assessment is carried out tends to be performance-oriented rather than value-related. The systematic comparison of analytical methodologies and validation of results is difficult since different measures and approaches are used. The

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development of analytical methodologies is hampered by lack of coordination among some of the responsible offices and lack of commonality of perception by the managers of the analytic efforts.

A recurring theme in the discussions was the statistical nature of intelligence. The analyst works from a limited sample of relevant data and the analyst is sometimes aware of the bias in the sample. Despite these views, quantitative statistical methodology is little used within CIA. In the political area in particular, analysts are aware of the quantitative methods of political science but not much use is made of them, in part because of the heavy premium placed on current analysis. An initial effort is only now being made to put together a base of statistical data base (e.g., census, statistical yearbooks, etc.) which are essential for quantitive political analysis.

There is also widespread recognition that interactive computers can play an important role in aiding the analyst. The ideas and the technology has been around for years and one component of the community, FTD, has made serious use of this technology. While we recognize that CIA has started use of consoles, we are concerned as to why it took so long for CIA to adopt this technology. Further, we are concerned that the contractor-designed system may only end up as an electronic replacement of the "shoe box" which would be an advance, but would in no way fully utilize the potential enhancement of the analytical capabilities.

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We found no consensus as to whether the development of analytical metho-
dologies should be centralized (ORD) or considered part of the continuing
work of the offices, such as OSR. Either or a combination of both can be
made to work, but only if there is a manager with the responsibility to
see to it that development of appropriate methodologies does indeed take
place. In fact, no one at present has that responsibility. We are
seriously concerned that the present largely haphazard approach to
analytical methodologies will be perpetuated unless management responsi-
bilities and oversight are clearly defined and understood by the partici-
pants.

3.0 Quality as a Subject for Methodology: Evaluation

There are almost no cases where an evaluation procedure is custom-
arily applied to intelligence output in a rational or well-understood
way. [This should be separated from the widespread problem of tending to
judge as bad a report that conveys bad news./ This means, ipso facto, that
it is almost impossible to evaluate analysts or, at a more general level,
the methods of analysis.   *weak*

This is not to say that it is impossible to find outright errors in
analysis -- like failing to make a diligent search of sources; but it
does tend to mean that such failures *surface* will be found only when the main
thrust of the work is wrong. A correct conclusion will excuse the most
heinous galaxy of errors in interpretation and inference, because they
will probably never have been noticed.

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Efficient evaluation of quality needs to be applied to three kinds of objects:

1) The intelligence document; that is, the individual output from the intelligence analysts.

2) The intelligence analyst; that is, the individual practitioner of intelligence analysis.

3) The intelligence analysis; that is, the set of analytical procedures and resources.

Evaluation, of course, is not useful in itself; it serves several ends. Nearly always, an analyst at the Agency is dedicated, hard-working, and responsive. A rapid, supportable evaluation of a document as a matter of course leads to improvements not only in that document but in succeeding ones. Furthermore, feedback about a report's influence (in high places) is a very special kind of reward that ought to be utilized more often. At another level, good evaluation enables a manager to control his resources, including his analysts, and to apply them in an optimum way. The exact nature of the "optimum" is prescribed to the manager by _his_ manager or superior.

We can, then, make a list of the roles played by the evaluation of quality; it should be emphasized that the point of knowing that the worth of something is, say, 3.2, is that then one knows that something when its worth is 3.7 is _better_ -- that is, the differences count, not the absolute level.

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1) If we can evaluate analysts in their tasks, their managers can assign them so as to maximize their joint effectiveness; he can improve an analyst by changing his tasking or work conditions in a rational way.

2) If we can evaluate analysts, it should be possible to begin to make more sensible and sensitive selection of analysts.

3) Once selected, the analysts can be given training that is more relevant and that can be demonstrated to improve them and their performance.

4) The support, both in automation and otherwise, can be fine-tuned according to how it improves performance, not merely according to some interpretation of doctrine.

5) Finally, the larger structure of the analytical process can be improved, and known to be improved, only if the evaluative techniques are sufficiently accurate, precise, and responsive to the national needs.

Case studies -- an example of retrospective evaluation -- are a valuable tool. They may be, and often are, misused, as in "Whom can we blame for 1) the loss of China, 2) the Soviets' getting the bomb 3) Iran?" Properly used, a case study should, inter alia, assign credit to the parts of the analytical process; it should compare alternative or conflicting processes or parts of processes -- by accurately evaluating their contribution in the case at hand.

4.0 Analyst-User Interaction: Feedback

The interaction between the analyst and the user can be used to improve substantively the quality of the analysis. Concurrently, such interaction can lead the user to frame requirements in a way that the Intelligence Community can best respond. However, the analyst-user interaction is an extremely delicate one. A user may come to depend on the quick reaction judgments of a few close associates when these judgments do not reflect the total community input. The analyst may come to know the users' views so well as to tailor his analysis to support those views and again the plaudits of the policy-making community. Despite these dangers, the inherent values of the interaction are great enough to warrant study.

In the course of our study, we identified a _few_ cases where the user was dissatisfied with the product, but this dissatisfaction did not get back either to the analyst or his manager. Nor were the requirements examined to determine whether the user had communicated his needs in such a way that the community really knew what he wanted.

Many users have either been in the Intelligence Community or know the community well. Some users have had little or no experience in intelligence but have the fortune of having good experienced intelligence officers assigned to their staffs Still others have no experience or continuing contact with the Intelligence Community.

We conclude that the user-analyst interaction is important, and current practices, successful and unsuccessful, need to be examined. The examination should include experienced and inexperienced users, both short-term

and longer term estimates and short and long turnaround times. Such a
group of retrospective looks at user-analyst interaction could lead to
guidelines or suggestions both to the user and Intelligence Community
of how best to interact, remembering at all times that the users, analysts
and managers are individuals.

5.0 Role of Automation (to be written.)
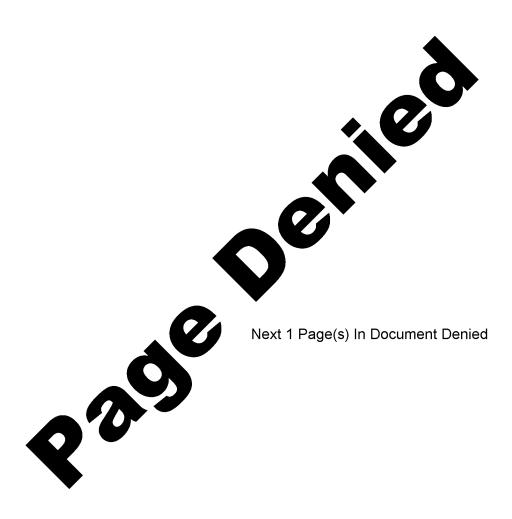
6.0 THE ROLE OF AUTOMATION IN ANALYTICAL METHODOLOGIES

There is little doubt that automation, including all the various tools and powers of modern technology, can vastly enhance the processing capabilities. This section examines what ought to be expected of automation, what can reasonably be expected, and what ought not to be expected of automation. It should be noted that accepting the fact of bureaucratic inefficiency--that is that a demonstrated need will by no means be always satisfied, even if it is demonstrably profitable as well--does not imply that the need should not be loudly proclaimed: except a man's reach exceed his grasp . . . .

By automation in this context we mean mostly the application of modern computer technology: it brings problems as well as powers, both technical and human. It enables the analyst to do things in ways and scales and times that could not otherwise be dreamt of. But they analysts must also change what they do. In some ways they must become more vulnerable. In the large, the net gain is enormously positive so that we endorse the current drive toward computerization of many of the analytical processes that are now being undertaken.

The next few paragraphs will describe some of the gains and warn of some of the pitfalls. We have already discussed the urgent need to find out what the analytical processes consist of; that is, what analysts do, how to tell whether they are doing it well, and how to tell whether a change is an improvement. That study is necessary as well in order to plan, design and control the computer resources assigned to analytical processes in a responsible way. Indeed, the use of computers online can itself help to gather data about analytical processes once they have been properly matched to the task.

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The use of computers can obviously assist some of those functions more than it can in others. Computer programs cannot now "comprehend" anything, let alone intelligence information, in any human sense; while they are widely used in #3 above, collating, etc.

Computers are far more effective when they are embraced by the users than when users are coerced. It should be realized that even with a large and expensive computer system, the users, that is, the analysts, are by far the most expensive part of the whole system. This means that the imposition of rules and regulations about the acquisition of equipment, its utilization, how terminals are to be assigned, and so on, must be continually sensitive to a rational evaluation of their productivity of the whole system, both analysts & computer systems. We do not know now what the best way will be to distribute and assign computing power, and we cannot know it until we try. Furthermore, computing will not merely change the costs of doing tasks, but will also change the kinds of tasks attempted & the way they are done. The most effective way to set standards is to reward the improved productivity that comes from following them, and that is the primary way management should exercise its powers, not by requiring certain kinds of equipment to be used at certain moments of operation.

Analytical methodologies should be exploring current techniques of processing so as to help in the transition to a more efficient utilization of processing where it is profitable to. Such studies can break loose from current attitudes and practices, for it is well known to be difficult for an analyst alone to stand back from his environment of continuing crises and pressures and to examine the broader aspects of change and computerization.

It is tempting to run through the list of functions above, showing how computers can, or cannot, help in each item; but this is probably not the place to do that, and the agency has, in many cases, already done so. What should be emphasized is that the traditional breakdown of functions will be altered by computers and often in significant ways. For example, communicating

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computers that can transfer files easily can enable remote collaboration in which analysts do not have even to see each other in order to collaborate interactively in intelligence analysis--indeed, they might even be in different agencies. But automatic inferencing is not one of the functions that will soon be automated, although it should certainly be studied.

Similarly, evaluation is far easier in a computer environment, just because the extra load for the computer is negligible to store the actions and queries that an analyst performs, and to group them according to category. The role of management should be one of leadership not prescription. It should not, for example, prescribe the use of this or that computer language; rather, it should point out the advantages of being able to share programs and data with other users' files. Part of the reward structure for compatibility with other units in the agency could well be organizational or budgetary in nature--equipment or software that enhances compatibility and collaboration could be given or supported by higher level management.

A key theme is powerful communication, which both supports and is supported by computerization. The use of message systems agency-wide (community-wide?) can add new dimensions to the possibility of collaboration, to say nothing of distribution and presentation. Furthermore, the structure of the message system can go far towards assuring the compatibility of different systems: the difference is between requiring the use of a particular machine and requiring that any system used must be able to participate in a message system.

Fundamentally, automation and use of computers will not produce magic results although they can produce very remarkable ones. One topic we have not touched on here is the integration of the information flow from collection to processing; so that the format in which information is collected and distributed should more nearly match those needed for efficient processing.

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The action and queries can be a powerful tool in analyzing the procedures used by an analyst. If the analyst is working interactively, which we presume ought to be the usual mode, then merely storing each query/request, together with the exact time it was issued, will provide adequate data. The study of those data could well serve as the keystone to a truly dynamic CDAM.

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